Research in moral and ethical judgement: A methodological review

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Abstract

Research methodologies used to investigate three areas of moral and ethical decision making are reviewed with the intent to highlight those that are potentially of interest to DRDC and the defence research community. A summary of measures used to examine individual moral reasoning includes compendia of the widely used Moral Judgement Interview and Defining Issues Test. Additionally, measures of moral behaviour are discussed with an emphasis on those surrounding issues of helping and social behaviour. Moreover, research methods used to investigate growing fields of interest, such as the influence of intuitions, emotions and proximity on moral judgement and actions, are also presented. Conclusions are drawn and recommendations for future directions of research relevant to DRDC are made.

Résumé

Les méthodes de recherche utilisées pour sonder trois secteurs de prise de décisions morales et éthiques en vue de déceler celles qui pourraient intéresser Recherche et développement pour la défense Canada (RDDC) et la communauté de la recherche de défense ont été examinées. Le résumé des instruments de mesure utilisés pour étudier le raisonnement moral personnel inclut des abrégés de la Moral Judgement Interview et du Defining Issues Test, deux instruments largement répandus. Les instruments de mesure du comportement moral sont également étudiés, et l'accent est mis sur les questions connexes de l'aide et du comportement social. Les méthodes de recherche utilisées pour sonder des domaines qui suscitent de plus en plus d'intérêt, notamment l'influence des intuitions, des émotions et de la proximité sur le jugement moral et les actes, sont également présentées. Des conclusions sont tirées, et des recommandations sur l'orientation de la recherche pertinente pour RDDC sont faites.

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Executive summary

Research methodologies used to investigate three areas of moral and ethical decision making were reviewed with the intent to highlight those that are potentially of interest to DRDC and the defence research community. The merits of two measures of individual moral judgement, the Moral Judgement Interview (MJI) and the Defining Issues Test (DIT), were first discussed. These measures allow comparisons of moral judgement differences within and between individuals to be made. Furthermore, the measures can be used to gather supportive evidence for various theories, such as Kohlberg's moral developmental theory. Of relevance to military ethical researchers, these measures can be used to create comparisons for the purpose of gauging the effect that external factors play on individual moral judgment. Overall, the two moral judgement measures assessed in this review are considered valid and reliable measures of individual moral reasoning. Kohlberg's MJI is an excellent tool used for taping into a subject's moral reasoning in an interview format. It allows respondents to compose less-structured responses than Rest's DIT and allows for the in-depth probing necessary in some investigations. Alternatively, the more popular DIT is easy to administer, less time consuming to score, and is considerer a slightly less subjective measure of individual moral judgment. In the future, perhaps it would be ideal to develop a version of the instruments that include a greater proportion of defence relevant ethical dilemmas.

As measures of individual moral judgement do not necessarily predict moral behaviour, it then became necessary to review alternative methods of investigating real-life ethical behaviour. Methods of studying altruistic or helping behaviour were identified foremost, as this type of behaviour is a common concern in the defence community. Many recent CF mission objectives include a focus on peace keeping and global aid. In these contexts, members of the Canadian Forces often encounter ambiguous dilemma situations, where they must choose between either aiding others or fulfilling other mission objectives and following the prescribed rules of engagement. Generally, the two most common types of simulated real-life helping behaviour scenarios involve situations where assistance is required and situations in which the opportunity exists to charitably give away some of one's resources. Common manipulations involve altering the number of bystanders, as well as the availability and the level of responsibility of the possible helper. While it is difficult to undertake these studies due to the stress that they could place on potential helpers, the information that they provide regarding how people altruistically act in stressful or emergency situations may prove to be invaluable. Additionally, games designed to simulate social dilemmas are useful tools in the study of real-life moral behaviour as humans are social beings and are often forced to make a choice between maximizing group or personal interests. The most basic social dilemma game, the prisoner dilemma, provides an opportunity to study more basic concepts of social behaviour. Additionally, the commons dilemma provides an excellent chance to investigate a number of more complex social-behavioural incidents relevant to the CF, such as the individual and group social consequences of being a cooperative or uncooperative member of the defence community. Finally, the intergroup prisoner's dilemma game is considered to be ideal for studying the complex factors present in dilemmas that occur between competing parties where dilemma solutions do not result in winner-takes-all scenarios, such as conflicts that arise between competing factions during war.

In addition to investigating individual moral judgement and behaviour, we summarized a wide range of research techniques used to gather evidence that emotions, proximity, and moral intuitions play a role in moral decision making. These techniques included comparing the somatic responses, moral cognition, and behaviour of those who lack somatic markers to individuals with intact somatic markers. In addition, we examined the use of neuroimaging techniques to study neurological processing of ethical dilemmas and the study of reaction time in order to identify if emotions play a significant role in the ethical decision making process. While it is unlikely that DRDC investigators will use fMRI techniques or comparisons of those who lack somatic markers during their own investigations, it is important to note that there are neurological methods which have been used to provide evidence that moral reasoning is a separate process from other types of decision making, that moral decision making can involve emotional processing, and that moral intuitions and awareness of one's emotional system plays a large role in guiding social decision making.

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Sommaire

Les méthodes de recherche utilisées pour sonder trois secteurs de prise de décisions morales et éthiques en vue de déceler celles qui pourraient intéresser Recherche et développement pour la défense Canada (RDDC) et la communauté de la recherche de défense ont été examinées. Nous avons d'abord étudié la valeur de deux instruments de mesure du jugement moral personnel, la Moral Judgement Interview (MJI) et le Defining Issues Test (DIT). Ces instruments de mesure permettent de comparer des différences sur le plan du jugement moral à l'intérieur d'une personne et d'une personne à l'autre. Ils permettent aussi de recueillir des données à l'appui de diverses théories, par exemple la théorie du développement moral de Kohlberg. Ces instruments de mesure, utiles aux chercheurs en éthique du secteur militaire, peuvent être utilisés pour établir des comparaisons et juger de l'effet de certains facteurs externes sur le jugement moral personnel. Dans l'ensemble, nous avons conclu que les deux instruments de mesure du jugement moral évalués dans le cadre de cette recension permettaient de brosser un tableau valable et fiable du raisonnement moral individuel. La MJI de Kohlberg est très précieuse pour évaluer le raisonnement moral d'une personne par le biais d'une entrevue. Elle permet aux répondants de donner des réponses moins structurées que le DIT de Rest et de sonder les questions avec la profondeur qu'exigent certaines enquêtes. Le DIT, plus populaire, est en revanche plus facile à administrer et moins long à noter, et il est considéré comme un instrument de mesure un peu moins subjectif du jugement moral personnel. Il vaudrait peut-être mieux élaborer ultérieurement une version des instruments qui inclurait une plus forte proportion de dilemmes éthiques liés à la défense.

Comme les instruments de mesure du jugement moral personnel ne permettent pas nécessairement de prédire le comportement moral, il a fallu examiner d'autres méthodes permettant d'évaluer le comportement éthique concret. Nous avons ciblé essentiellement des méthodes permettant d'étudier le comportement altruiste ou aidant, car ce type de comportement intéresse l'ensemble de la communauté de la défense. Bon nombre de missions récentes des FC ont eu notamment comme objectifs le maintien de la paix et l'aide internationale. Les membres des Forces canadiennes se trouvent souvent face à des dilemmes ambigus qui les amènent à choisir entre, d'une part, aider les autres et, d'autre part, remplir d'autres objectifs de mission et respecter les règles d'engagement prescrites. En général, les deux types les plus courants de scénarios concrets et simulés de comportements d'aide présentent des situations où certaines personnes ont besoin d'aide et des situations où une personne a l'occasion de donner généreusement une partie de ses propres ressources. Les manipulations courantes consistent notamment à modifier le nombre de tiers ainsi que la disponibilité et le niveau de responsabilité de l'aidant éventuel. Ces études sont certes difficiles à mener en raison du stress qu'elles peuvent imposer aux aidants éventuels, mais elles permettent de recueillir des renseignements sur le comportement altruiste en situation de stress ou d'urgence qui peuvent s'avérer inestimables. Qui plus est, les jeux visant à simuler des dilemmes sociaux sont utiles pour étudier le comportement moral concret, car les humains sont des êtres sociaux, et ils sont souvent forcés de choisir entre l'intérêt collectif et l'intérêt personnel. Le jeu de dilemme social le plus fondamental, soit le dilemme du prisonnier, permet d'étudier des concepts de base du comportement social. Le dilemme portant sur le bien commun fournit en outre une excellente occasion de sonder certains incidents sociocomportementaux plus complexes pertinents pour les FC, par exemple les conséquences

sociales, sur le plan individuel et collectif, de collaborer ou non avec la communauté de la défense. Enfin, nous considérons que le jeu du dilemme du prisonnier donne une excellente occasion d'étudier les facteurs complexes présents dans les conflits où le vainqueur ne gagne pas sur tous les tableaux, par exemple les conflits entre factions en temps de guerre.

En plus de sonder le jugement moral et le comportement personnels, nous avons résumé une vaste gamme de techniques de recherche utilisées pour recueillir des données selon lesquelles les émotions, la proximité et les intuitions morales joueraient un rôle dans la prise de décisions morales. Ces techniques consistaient notamment à comparer les réactions somatiques, la cognition morale et le comportement de sujets qui n'ont pas de marqueurs somatiques à ceux de sujets qui ont des marqueurs somatiques intacts. Nous avons également examiné l'utilisation des techniques de neuroimagerie dans l'étude du traitement neurologique des dilemmes éthiques et dans celle du temps de réaction, afin de déterminer si les émotions jouent un rôle important dans le processus de prise de décisions éthiques. Bien que les chercheurs de RDDC risquent peu d'intégrer à leurs recherches des techniques d'imagerie par résonance magnétique ou des comparaisons avec des sujets qui n'ont pas de marqueurs somatiques, il est important de souligner que des méthodes neurologiques ont permis de recueillir des données selon lesquelles le raisonnement moral est un processus distinct d'autres types de prise de décisions, que la prise de décisions morales peut faire appel aux émotions et que les intuitions morales et la conscience de son propre système émotif jouent un grand rôle dans la prise de décisions sociales.

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Introduction

The objective of this report is to provide a comprehensive review of various methods of studying moral and ethical dilemmas. These research methods will be discussed in detail, with special focus on the measures used and the various strengths and limitations of each technique. The scope of the review will be broad enough to cover a wide range of ethical methodologies, yet focus narrowly on measures that are potentially of interest to DRDC and the CF. Specifically, methodologies assessing individual moral judgement, "real-life" ethical behaviour, and the role of emotions, proximity, and moral intuitions on moral decision making will be discussed.

Background

In order to investigate methodological issues surrounding moral and ethical decision-making, some time should be taken in order to first explicitly define characteristics that qualify a situation as ethically charged and then discuss current ideology surrounding ethical dilemmas.

Working towards an ethical dilemma definition

Several researchers and moral philosophers strictly adhere to the notion that a true ethical dilemma will, by necessity, be marked by two or more moral standards in conflict with one another, such that any possible solutions will result in the violation of at least one of the conflicting standards ([1]; [2]; [3]). The Heinz dilemma that follows is an example of an ethical dilemma that meets these requirements:

> In Europe a women was near death from cancer. There was one drug that the doctors thought might save her. It was a form of radium that a druggist was charging ten times what the drug cost to make. He paid $200 for the radium and charged $2,000 for a small dose of the drug. The sick woman's husband, Heinz, went to everyone he knew to borrow the money, but he could only get together about $1,000. He told the druggist his wife was dying, and asked him to sell it cheaper or to let him pay later. But the druggist said, "No, I discovered the drug and I'm going to make money from it." So Heinz got desperate and began to think about breaking into the man's store to steal the drug for his wife.
>
> [4]

In accordance with the definition above, the Heinz dilemma conflicts the principle of one's right to life with the principle of one's right to own property; a solution to the Heinz dilemma can not uphold one central value without violating the other.

This strict definition of an ethical dilemma does not afford certain dilemma situations, which also require difficult decisions to be made, to be considered true moral dilemmas. Using the stringent definition, Slim [3] identifies four dilemma situations that merely masquerade as

true moral dilemmas. These situations are similar, but lack part of the definitional components of true moral dilemmas. While not all of these situations will be discussed in this review, one involves conflict arising between moral and non-moral issues, such as when one experiences conflict between the desire to be morally righteous and the desire to cheat in order to excel (i.e. on tests, card games, taxes). According to Slim and the above definition, conflicts between moral and non-moral issues should not qualify as true moral dilemmas because morally righteous actions remain clearly identifiable; choosing whether to follow them or not are simply difficult choices involving weighing what is right against what is most profitable.

However, in the context of ethical judgement, this definition seems excessively rigid for several reasons. Primarily, situations in which moral and non-moral issues collide should be considered moral dilemmas because, even though morally righteous choices will be obvious, temptations to break ethical principles remain. Therefore, these situations still involve the potential to violate morally relevant principles. Additionally, a broader definition of ethical dilemmas would allow more opportunity to study moral conflict as people generally have more exposure to these less elaborate cheating or opportunistic ethical dilemmas than the Heinz-like complex dilemmas. Finally, a more lenient moral dilemma criterion seems to be accepted by much of the psychological community. A great deal of moral development literature investigates scenarios in which moral values conflict with non-moral values, such as the non-moral value of personal gain in the helping behaviour and social dilemma games research ([5]; [6]; [7]; [8]; [9]).

Thus, for the purposes of this review, it is unhelpful to define a moral dilemma so narrowly. As we aim to investigate a wide range of methodologies, our definition of a moral dilemma will be broadly defined as any situation in which *at least one* moral value has the potential to be violated. This new definition will be used as a foundation for the study's later review of methods of investigating moral and ethical decision-making.

Canadian Forces (CF) and Department of National Defence (DND) value systems

When determining whether a dilemma is an ethical dilemma (involving the potential violation of an ethical principle), attention also should be given to the fact that morals are general rules of conduct recognized only in *certain* associations of human life [10]. They are not necessarily constant across individuals or groups. Something considered an ethical value to one person, may not seem to be as ethically important to another. As such, the ethical status of a dilemma will primarily depend on the distinct value system of those faced with the dilemma. For example, Moore [11], who observed the moral reasoning of Hindu, Muslim, and Sikh persons in a farming village in India, found that respondents infrequently cite the North American defined notion of justice as a rationale for determining the correct moral course of action in response to hypothetical dilemmas. Furthermore, within this population, rationales for responses vary according to respondents' religious beliefs and station in life.

The Canadian Forces (CF) and the Department of National Defence (DND) have their own value system with which they judge the 'ethicalness' of situations. We believe that many of their values are unique to the defence community and not as readily embraced by the majority

of Canada's populace. For example, according to the Statement of Defence Ethics [12], the three ethical principles identified as critical to the defence community, listed in order of importance, are, 'respect the dignity of all persons', 'serve Canada before self', and 'obey and support lawful authority.' However, this value system seems unique to the defence community, relative to the general public, in that most civilians do not place serving their nation before serving themselves. Thus, when faced with a choice between doing what is best for oneself and doing what is best for one's country, people who do not put value in doing what is right for their country may be less likely to identify that an ethical dilemma exists. Conversely, awareness of an ethical dilemma might immediately be triggered for people, for example military people, who value serving their country before themselves. Thus, when considering the ethical status of dilemmas, it is important to remember that if an action is not readily seen as fundamentally right or wrong, then it cannot be easily flagged as having a moral status.

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Summary of existing methodologies

Assessing individual moral judgement

Measures of individual moral judgment allow the study of several things. In their most basic form, measures of individual moral judgement can serve as a scale or index from which comparison of the differences within or between individuals is possible. These indices also allow a method of testing and supporting moral theories, such as Kohlberg's moral development theory[1][13]. Through longitudinal and cross-sectional studies of individual moral reasoning, Kohlberg has provided evidence that moral judgement matures progressively over the course of one's lifetime in the sequence he hypothesized [2]. Measures of moral judgement also give opportunity to study and compare the moral judgement levels of specific populations or individuals in certain situations (i.e., juvenile delinquents, highly educated professors, professional soldiers). The most exciting application of measures of individual moral judgement is that they allow one to study the effect that external factors (manipulations or situations) have on people's current moral judgement. In effect, one could study if and how moral judgement can be altered when a person is exposed to differing circumstances (e.g. membership in an extremely structured group with top-level reasoning) or exposed to certain manipulations (e.g. exposure to reasoning in a group, exposure to an individual exhibiting higher-level reasoning).

Working along these lines, White [4] studied the effect of rigidly structured hierarchical organizations on individual moral reasoning. He hypothesized that a rigid organizational

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[1] Kohlberg's model purports that an individual's moral reasoning develops through a sequence of six progressive stages as a result of exposure to moral-problem solving. These stages are seen in relation to a justice-based orientation. Individuals move through the stages such that they potentially come to judge the world and solve ethical problems based on critical examination of the situation in relation to universally accepted ethical principles. However, not all individuals reach the upper-most stages of moral development. Moral development begins at the preconventional level, where individuals' senses of right and wrong are based on what is best for themselves. These preconventional thinkers do not focus their moral values on concern over the needs of the group. Someone in the lowest of the six stages of moral development would respond to moral dilemmas egotistically by seeking a solution that obeys others for fear of receiving punishment [4]. A person with an orientation towards the second stage of moral development would view what is right to be whatever is self-satisfying. These first two stages are typical of young children. The later four stages more often describe adults, yet only a very small percentage of the population develops beyond the fourth and fifth stages. Individuals who operate at the third and fourth stages of moral development, which are referred to as conventional forms of moral reasoning, determine what is right or wrong from a group perspective. Someone at the third stage solves morally challenging situations by trying to help others in order to win their approval. When solving a moral dilemma he or she would use what the majority of others would do in the same situation as a moral reference point [14]. The fourth stage of moral development involves reasoning from a duty perspective: one believes in following established rules. The postconventional fifth and sixth stages of moral reasoning focus on reasoning from a perspective that is above the group. Here, rules and laws are critically examined. In the fifth stage, one will solve dilemmas by looking toward what is best for the society. In the sixth stage, one will use universal overriding maxims (i.e. "Do onto others as you would have others do onto you;" [14]) in order to make moral decisions.

hierarchy would restrict moral development and that members of the United States military, which is extremely structured, would show lower levels of moral reasoning. Furthermore, White hypothesized that military personnel serving on large-ships would score significantly lower on a measure of individual moral reasoning than land-based military personnel, because they lived in an extremely structured organizational climate that deprived the majority of members of decision-making responsibility. Through administration of the Defining Issues Test [15], a measure of individual moral judgment, White found that military members did score lower than a large meta-sample of the American population and that ship-based military personnel scored significantly lower than their land-based colleagues. As is apparent, individual measures of moral development are very useful in psychological ethics research. The following sections will review two individual moral reasoning measures, the Moral Judgement Interview (MJI) and the Defining Issues Test (DIT).

Moral Judgement Interview (MJI)

The Moral Judgement Interview is designed to obtain a measure of an individual's capacity to reason morally according to Kohlberg's six-stage model of moral reasoning. The forty-five minute semi-structured MJI attempts to draw out a subject's moral reasoning level, understanding or interpretation of moral reasoning, moral frame of reference pertaining to what is right and wrong, and how these are used to make and justify moral decisions [2]. This measure can be used to study many areas of moral reasoning in psychology. Apart from the uses discussed above, correlates of higher level moral reasoning and factors leading to or encouraging higher-level moral thinking are just two examples of what can be studied using the MJI.

The basic methodology involves presenting subjects with ambiguous hypothetical dilemma situations, each with corresponding standardized probe questions, and recording their responses to the probes. There are three standardized forms of the MJI, and each form contains three dilemmas. The Heinz dilemma is one such example. As in the strict definitional tradition discussed in the introduction, these dilemmas are designed such that two pre-defined central issues are in conflict with one another so that solutions remain somewhat ambiguous. Recall that Heinz is unable to save his wife's live without stealing the druggist's property; he cannot preserve both life and property values. Following the presentation of each dilemma, the subject is asked to respond to 9-12 standardized probe questions intended to "elicit justifications, elaborations, and clarifications of the subject's moral judgements," [2]. The subject's responses are recorded for subsequent analysis.

There are several ways to direct the course of the MJI. It is conducted best using oral interviews, which are tape-recorded and later transcribed. While this allows for the most opportunity to probe a subject and fully record responses, this is also the most costly method. As an alternative, the interviewer can hand-record the interviewee's reasoning as a response is made. Because the interviewer remains in control of the depth of questioning, further probing can still occur in order to gain clarity when faced with ambiguous responses. A final approach to gathering data is the written questionnaire. Though less desirable due to the decreased opportunity for response probing, this may be the only viable option for projects that involve many subjects. Here, a subject completes the interview independently. Once the interviewee has completed the initial recording process, the experimenter reads over the

responses, identifies any ambiguities, and asks any questions necessary for further probing (for further instructions on any of the above processes, see Colby & Kohlberg, [2]).

When scoring the interviews, the essential measure of interest is not a subject's chosen course of action, but *why* a subject thinks a particular action should be taken. Thus, responses are rated with a special focus on the rationales behind derived solutions, rather than on the specific solutions or content that an individual generates. The MJI is standardized such that all of the pertinent issues of each dilemma are predefined; responses need only be classified according to clear procedures and rules found in the scoring manual (see Colby et al., [16]). Each dilemma response is assigned a moral judgement level based on three response dimensions. The scorer initially identifies which issue is being upheld (e.g. In the Heinz dilemma, one could choose to steal the drug). Then, he or she studies the interview response to identify which norm is leading a subject to support a particular issue. For example, in the Heinz dilemma, one might chose to save the wife's life because of a life-preservation norm. Finally, the scorer identifies the way in which the significance of the norm can be construed (e.g. In response to the Heinz dilemma, one might steal the drug, due to affiliation, because of the element of love or, alternately, because of a sense of duty). From all this, the scorer can match the subject's response to a specific criterion judgement, a prototype of the subject's response, and assign a per-dilemma moral reasoning score to the subjects response. Following our example, a respondent who reasons that the pharmacist's drug should be stolen because one has a duty through affiliation to save one's wife's life would be scored as responding using a life issue, affiliation norm, and duty element. As the response would match the criterion judgement, "Heinz should [has a duty to] steal the drug even if he doesn't love his wife because… he is still her husband," [2], this particular response would score at the third stage of moral reasoning. In contrast, a respondent who reasons that Heinz should save his wife's life because the right to life should supersede the right to property would be operating at the fifth stage of moral reasoning. The final score of an individual's moral reasoning capability is based on a slightly more complicated amalgamation of the three dilemma scores, which will not be discussed at this time, given the constraints of this report.

Overall, Kohlberg's design has several strengths. Because he insists on a great deal of training to ensure consistent scoring on the judges' parts, the MJI offers high inter-rater reliability. As well, as indicated earlier, the measure is very useful in studies as a pre and post-measurement in order to ascertain the effect of manipulations on a subject's moral reasoning. To illustrate, Charlie Keasey [17] used Kohlberg's moral dilemmas in order to determine whether exposure to other's moral dilemma reasoning would elevate moral reasoning in preadolescents who operate in the first three levels of moral reasoning. Following an initial MJI pre-test measurement, subjects were presented with Kohlberg-type ethical dilemmas. After each dilemma's presentation, the subjects marked down their desired choice of action, heard two experimental assistants respond to the dilemma, and then stated their own dilemma reasoning. The assistants either stated only their desired course of action for each dilemma, without explanation, their desired course of action followed by the same level of reasoning as the respondent, or their action-choice followed by plus-one reasoning (reasoning at one level higher than the subjects). In addition, the assistants either both agreed with the subject's chosen course of action or each chose a differing course of action. Subjects were given a post-test of MJI dilemmas the following day or two weeks later. Upon analysis, it was found that only a small amount of upward reasoning was produced, supporting the cognitive-developmental view that moral maturation does not occur suddenly, but instead

takes time. Additionally, although exposure to plus-one reasoning produced an immediate change in reasoning, supporting the learning component of the theory, it failed to produce significant long-term reasoning change. This was possibly due to forgetting and interference.

While Kohlberg's MJI is a well-used instrument, there are a few weaknesses to the measure. Despite the high level of training required for scorers, the MJI is still considered quite subjective, as the nature of the marker's grading still allows for interpretation. This threat to the MJI's objectivity decreases its face validity [14]. In addition, the MJI requires sufficient subject articulation in order to gather enough information to make an accurate judgement of the subjects' moral reasoning ([18]). Another criticism of the MJI is that it is time-consuming to administer. It requires the presence of an interviewer during data collection, the use of transcription processes either during or post-interview, and a complicated scoring process, as well as significant training for each interviewer and scorer. Additionally, there has been much debate about the validity of Kohlberg's theory of moral development in recent years [19, 20]. Research has found that people do not always know or cannot always articulate the reasons as to why they feel the way they do [21]. Haidt [20] suggests that Kohlberg should not take the moral justifications given during the MJI at face value as they may not reflect a subject's true rational for choosing a certain moral dilemma action.

There is also criticism of Kohlberg's theory, on which the MJI is based. Gilligan [22] considered the six moral stages, placed in the context of a justice orientation, to be biased against women, who base their reasoning more on a care orientation. A later study by Murray (Murray's study as cited in White, [4]) found that both males and females based their reasoning on a combination of justice and care. Subsequent investigation by Wark [23] found no overall gender differences in moral judgement, as assessed via the MJI. Another theoretical concern with Kohlberg's MJI is that political identity has been found to be linked to the different moral judgement assessments. In numerous studies, subjects who report more liberal (left wing) political attitudes score in the higher stages of moral reasoning [24]. Despite the criticisms of Kohlberg's theory and measure, the MJI remains a major accomplishment in the field and is still used today as a method of gathering data regarding moral cognition.

Defining Issues Test (DIT)

James Rest's [25] DIT has garnered widespread popularity because of the many improvements it has made over the MJI. In fact, the measure has become the most widely used instrument for measuring moral judgement [4]. Based on Kohlberg's model of moral development, the DIT relies on the premise that individuals reason using six graduated stages of moral reasoning sophistication, ranging from consideration of only self-interest to what is best for humanity. However, unlike Kohlberg, Rest believes that an individual operates within a multi-stage graduated range of moral reasoning as opposed to a single graduated-stage model. To illustrate, according to Rest, one may chiefly engage in the fourth stage of moral reasoning when dealing with dilemmas, but occasionally use the third or the fifth stage instead. Reliance on particular stages vary, but people tend to progress to higher stages during development [15].

There are several reasons for the DIT's widespread popularity. The measure is considered less subjective than the MJI because it gathers quantitative data, leaving no room for error in scoring interpretation. Furthermore, the forty-minute, paper and pen, multi-item format requires little supervision during completion and can be administered to large samples with little cost or time consumption, as an interviewer does not need to be present to ask questions. As well, the format can be marked easily because there is no need for interview transcription or scoring prior to analysis. The DIT also eliminates the need for the extensive scorer training typical of the MJI.

The design of the DIT is like Kohlberg's MJI in that it requires subjects to read and respond to several hypothetical, morally challenging dilemmas. In fact, three of the DIT's six static moral dilemmas originate from the MJI (the Heinz, Prisoner, and Doctor dilemmas), while the remaining three come from another source [4]. However, the DIT circumvents the relatively awkward scoring process required by the MJI's semi-structured interview by collecting quantitative measures using a 72-item questionnaire (6 dilemmas x 12 questions per dilemma). Each question, while directly related to the dilemma in question, also embodies reasoning at one of Kohlberg's stages. The respondents are to identify the degree to which they will take each of these questions or concerns into consideration when deciding what should be done. To do so, they use a five-point Likert scale ranging from 'Great importance' to 'No importance'. For example, in reference to the Heinz dilemma, question 10 concerns "Whether the law in this case is getting in the way of the most basic claim of any member of society" [15]. In this case, one might rate the statement to be of 'Great importance' if the reasoning used is in Kohlberg's upper stages. In addition to rating the importance of each stage's moral considerations, respondents also rank order what they believe to be the four most important questions and state their action preference by checking off one of three boxes: choice a, choice b, or 'can't decide'.

The instrument creates a P-score, which is a measure of the degree to which an individual reasons at the post-conventional fifth and sixth stage of moral reasoning. P-scores range from 0-90 and higher numbers reflect greater usage of principled reasoning (Dukerick et al., **1990). Because Rest's model assumes that a respondent occasionally uses higher or lower level reasoning, the DIT has been designed to measure the degree to which individuals engage in each stage of moral reasoning.

Another form of data that could be collected during the initial Likert-scale rating is reaction time data. As the scale is used to assess the degree to which an individual considers certain aspects of a moral dilemma, if certain dilemma aspects have become more recognizable, or possibly even well learned considerations when faced with a moral dilemma, then reaction times to these questions will be faster than reaction times to less considered aspects of a moral dilemma. At present research has not assessed DIT reaction time measures. However, this might be an important measure to investigate in future research.

The DIT can be used for cross-sectional, longitudinal, cross-cultural, interventional, and correlational purposes [4]. Cross-sectional comparative, longitudinal, and cross-cultural comparative studies are largely used to validate moral developmental theory, providing evidence that people across all cultures develop more complex higher-level moral thinking over time. They also can provide evidence as to what the most important determinants of moral development may be. During intervention studies, the DIT can be used to provide a pre

and post-measure in order to gauge the effect of any type of intervention imposed on a subject. A multitude of studies have been performed that investigate the effect of exposing a subject to groups or individuals who reason at differing levels [18]. Correlational studies generally are used to look for links between DIT scores and specific coinciding variables such as level of education, delinquency, and helping behaviour.

While the DIT is currently one of the most well used individual moral judgement instruments, it is not without its faults. Similar to the MJI, it has been suggested that political philosophy may also account for some of the DIT response variance [26]. Another limitation of the DIT is that, like the MJI, it is only capable of investigating current moral reasoning and cannot to be used as a predictive device for a subject's behaviour in real-life situations [27]. However, Blasi's [28] meta-analysis bridging moral cognition and moral action found that a majority of studies show a correlation between DIT scores and moral behaviour. An additional criticism is that, by providing respondents with options from which they choose, the measure could be constraining their choices to these options. As a result, the extent to which selected options accurately reflect what a respondent's free-choice decision strategy would be cannot be known. As well, respondents' reported moral reasoning may be influenced by the list of predetermined considerations that they are asked to rate. If they find a consideration on the list that they determine post-hoc to be extremely relevant, but did not actually consider during their initial decision making process, they may report it as an important consideration irrespective of the fact that they did not actually use it during *their own* moral decision making. This post-hoc re-evaluation can affect their DIT scores. Another criticism of both Rest and Kohlberg's measures comes from Jonathan Haidt [19]. He argues that the study of moral reasoning does not actually measure what Kohlberg and Rest claim: the study of how people go about actively making decisions. Instead, moral reasoning is more of an after-thought; people first come to decisions based on automatic intuitions and later use moral reasoning as an attempt to explain their intuitionist solution post-hoc. Finally, Haidt [19] brings attention to Kohlberg and Rest's methods by criticizing the two methodologies for being incongruent with their theory's beliefs. He argues that, if moral reasoning occurs before a decision is made, neither should prompt subjects to choose between the hypothetical dilemma's action 'a' or 'b' before questioning the moral reasons why they chose what they did. Despite his criticism, Haidt suggests that the above methods remain important in eliciting the way in which people communicate to each other about their moral intuitions.

Investigating "Real-life" moral behaviour

While, historically, a great deal of ethics research has focused on moral reasoning, behaviours generated in response to moral dilemmas are important to investigate as well. Some researchers believe that moral behaviour is an extension of moral reasoning, meaning that people will generally react to a real situation using behaviour similar to that which they report they would use during a hypothetical discussion [28]. However, others believe that there is a discrepancy between moral thought and reasoning [29; 30]. One Vietnam veteran, who was interviewed by Charles Bass during his doctoral dissertation ([14], p. 13) on morality in combat, best illustrated the lack of consistency between moral thought and action. Bass reported that the veteran "smiled to himself when new recruits protested being in Vietnam, due to their conscientious objections to war. They professed that there was no way they would ever kill another human being. However, it never failed that, as soon as the first enemy

bullet whizzed overhead, the 'conscientious objector' would be on the ground and shooting back as quickly as he could [31]." Perhaps this discrepancy between thought and behaviour is a result of the situational characteristics present in real-life dilemmas.

The following section will review the various methodologies used to investigate moral behaviour in its various forms. However, it is important to note that, because moral behaviour research often focuses on gathering information about people's moral behaviour in varying situational characteristics, there is extreme variation in the methods used in behavioural paradigms.

Helping behaviour

Augusto Blasi made a keen observation during his 1980 review of the moral cognition and action literature: helping others seems to be considered axiomatically moral; it is right to help other human beings via kindness, sharing of resources, and prevention from physical and emotional harm. Unfortunately, it seems that certain factors present in moral dilemmas make helping behaviour less likely. According to Blasi, response to need depends on:

> The genuineness and the urgency of the other's needs as well as its relative importance over the agent's needs, the relations of closeness, dependence, or responsibility between the other and the agent, the personal characteristics of the person in need (e.g. his pride or arrogance, maliciousness, and, more generally, deservedness of help), and, finally, the possible conflict of altruism with other moral considerations, such as obedience, social expectations, and responsibilities.
>
> ([28], p. 26)

Furthermore, Darley and Latane [32] suggest there is an additional decision scheme where, in order for people to help, they must first notice that help is needed, interpret that it is an urgent situation, and assume responsibility for helping. A well-known instance of when people fail to provide helping behaviour is the 1964 murder of Kitty Genovese[2]. Despite the number of onlookers who reported that they realized Kitty was in need of help and realized that it was an emergency, none assumed responsibility for helping due to certain characteristics of the situation. It seems that the number of bystanders had an effect on others' willingness to help, a conclusion supported by numerous psychological helping behaviour studies [32; 33; 34]. Perhaps this was because of a perception of diffused responsibility.

Generally, there are two common types of simulated real-life helping behaviour studies: those that involve situations where assistance is required and those that involve opportunity to

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[2] Genovese was violently attacked in front of her Queens apartment building with at least 38 witnesses present, reporting that they heard her screams and saw her in need of help from their windows. The attacker, who initially fled the crime scene, returned several times over the course of the next half hour to stab her repeatedly, eventually causing her death. Police were not summoned to the incident until almost an hour after the initial attack, although witnesses were aware of her need for help within the first few minutes.

charitably give away some of one's resources. In both of these situations, a number of manipulations have been used. One involves experimentally highlighting certain critical features of a situation in order to see the effect of that feature. This is typically done through manipulating the presence or absence of the critical feature or by stressing the potential for reciprocity following assistance. Darley and Batson [35] examined how altruistic priming, religiosity, and an agent's situational time constraints (tardiness for an other engagement) would affect the agent's willingness to help in an emergency situation. They devised a method of varying the degree of each variable. Theology students were asked to give a talk on a certain issue across campus. Half of these students were asked to talk on the Good Samaritan parable. The other half were asked to give a talk regarding some other non-helping topic. Furthermore, half were lead to believe that they might be late, forcing them to rush across campus, and the others were lead to believe that they had sufficient time to get to there. On the way, the students' encountered a situation that was similar to the Good Samaritan parable; a man was slumped over in an alley looking as if he needed assistance. The students' behaviour was coded as to whether or not they offered help to the victim. The authors concluded that situational time restraints played a large role in an agent's helping likelihood. Religiosity and the knowledge that one will be speaking about helping in a similar situation did not increase helping likelihood. Numerous other studies have used the same manipulation style [36] The second manipulation that can be used to measure a characteristic's effect on an agent's helping behaviour involves altering the meaning of the situation for the agent [28]. One method of doing this is to alter the verbal or written instructions or descriptions given to an agent (e.g. stressing to the agent that someone in need is 'poor' or that he might reciprocate or hates sharing with others) and then see how much an agent is willing to help the one in need. Another method of altering the meaning of the situation for the agent is to change how the agent interprets the situation. Schwartz and Ben David [37] created a situation in which a female experimenter needed help when a dangerous rat escaped from its cage. Subjects were either lead to believe that they were responsible for the escape or that the escape was due to the experimenter or chance. The degree of helping behaviour provided by the subject was then measured. It was found that subjects helped most when they believed they were at fault.

In addition to the variety of manipulations created to investigate helping behaviour, a number of behavioural measures have been used as well. Some of these studies have used behavioural measures in conjunction with measures of moral cognition. Helping and sharing are the most common behavioural measures. Helping is not only classified in terms of a Boolean presence or absence of help, but also in terms of the type or degree of help given. Sharing is more often accounted for less subjectively. Numerous studies have used paradigms in which the agent possesses a quantity of an object (e.g. candies, bonus points, dollars) and is given a chance to share it with another. Here, the measure taken is usually the amount or percentage shared. Other quantities or qualities found measured in the literature are justice, reciprocity, and gratuity [28]. Reaction time would also serve as a good measure for comparisons between conditions. One could measure the time taken from the initiation of a needy situation until when help is offered in order to gage an agent's willingness to help. Galvanic skin response (GSR) data could also be used to study helping behaviour. It could gage the strength of subjects' physiological arousal in response to observing dilemmas and emergency situations where help is needed or identify the compellingness of certain situational characteristics.

Despite the importance of this field of study, researching real-life helping behaviour is challenging for several reasons. First, it is difficult to create a sense of situational 'realness' that makes a need for help believable. If the situation seems too contrived or hypothetical, the true helping tendencies of individuals may not be elicited. Yet, at the same time, experimental ethical guidelines constrict the experiment, ensuring that all subjects are voluntarily consenting to the experiment and that the experimental session is not too stressful or psychologically damaging. In addition, real-life reactions to ethical situations, such as people in need, can be altered by even the slightest of situational characteristics. Darley and Latane [32] found that a second bystander significantly reduced the probability that the first bystander would offer help when needed (from seventy to sixty percent). When a third or fourth bystander was presumed available, only about forty or thirty percent of first-bystanders offered help, respectively. As behaviour is so sensitive, experimental scenarios must be carefully planned and results may not be widely generalizable to other situations. Nevertheless, it is important to study ethical helping behaviour in real-life contexts because the results speak not just of what people say that they would do when faced with a sudden or urgent need, but what they did do and whether they offered help.

Social dilemma studies

Games designed to simulate social dilemmas offer a good opportunity to study moral behaviour as individuals are placed directly into a situation in which they are forced to make a choice between maximizing group or personal interests [38; 39]. In technical terms, Robyn Dawes ([40], p. 2) describes a social dilemma as "a situation in which each player has an anti-social dominating strategy and in which the choice of dominating strategies results in a deficient equilibrium." Here, the dominating strategy refers to the action that is best for the decision maker (DM), irrespective of the other individual group members' actions. The dominating strategy is almost always to be uncooperative, as the DM will benefit most from this when he does not know whether the other group members will cooperate. Note that if the DM cooperates, but others do not, he will be at a disadvantage. However, a quandary occurs because individual selfishness does not actually produce the most beneficial outcome; if all the group members cooperate, then the DM and the others will receive the highest payback (most benefits). Thus, as the DM's best course of action (the dominating strategy) will not always be best, the deficient equilibrium is created.

Aside from the payback structure discussed above, there are other influences that cause people to cooperate. Generally, people engaged in social dilemmas place more weight on the group's best interests than on their own in order to behave "appropriately" [6]. Societal morals pressure them to do what is best for the group, because it is 'right' to support the collective. However, in these social situations there are also issues of trust whereby one must decide to cooperate knowing that there is a risk that others may not. The payback structure of social dilemmas is typically setup such that if a DM cooperates, but the other group members do not, he will be severely punished. Additionally, while Jonathan Baron [41] notes that it is normatively implicit that all people should always cooperate, it is always tempting to be greedy, maximizing one's own benefits. Social dilemmas are the conflict between individual greed and collective ruin.

As moral values affect behaviour during social dilemma games, the games provide an excellent opportunity to investigate people's behaviour in response to moral issues in an experimental context. By altering characteristics of the dilemma situation, researchers can investigate how each characteristic plays a role in a moral dilemma. Research methods involving two of the most prominent social moral dilemma games, the prisoner's dilemma and the commons dilemma, will be discussed below. In addition, a more complicated game, the intergroup prisoner's dilemma, which better illustrates intergroup conflict typical during war [42], will be presented as well. As the methods of theses dilemmas are quite similar, a critical discussion of how they may be altered, with empirical examples, will be presented after the games have been described and their dominant strategies explained.

The prisoner's dilemma game

The prisoner's dilemma is considered the most simplistic social dilemma game [40]. The basic paradigm involves only two prisoners and goes roughly as so: A crime has been committed and the two prisoners are guilty. Each has been sequestered to give his statement separately, confessing or denying the crime, and each is offered a deal. They are told, "If you confess to your crime in order to help convict the other prisoner, then you may go free and he will serve ten years in prison. If neither of you confess to your crime, then you will both be held in prison, on lesser charges, for two years. However, if both of you confess to your crime, then you will both be held in prison for five years." Each of the prisoners is then separated and asked to give his statement, either a confession or a denial. Confession (defection) and denial (cooperation) rates are measured.

From a purely materialistic viewpoint, a prisoner should weigh the choices as follows: If he (prisoner A) confesses that they have committed the crime, but his partner (prisoner B) does not, then he will be set free for helping. If prisoner A confesses and his partner confesses too, then he and his partner will receive a moderate amount of jail time. While this second strategy does not produce the most preferred outcome, this is still better than if he remained loyal and his partner turned him in (causing his sentence to become severe). Thus, he would see confession to be the dominating strategy, as it would keep him out of severe trouble, regardless of what his partner does. However, deficient equilibrium is created, as there is still a chance that his partner would go against his dominating strategy by not confessing. If neither partner confessed, their punishment would be best for them collectively, as they would only be sentenced with a lesser charge and minimum jail-time. This outcome is most appealing for a prisoner that cares about both his own welfare and that of his partner's, but remains quite risky.

The commons dilemma game

The commons dilemma was first introduced in 1968 by Garrett Hardin, who described the demise of a public plot of land (the 'commons'), which was used by many farmers to graze their cattle [43]. The commons were sent into

ruin due to overuse, as each farmer greedily allowed his own cattle to eat too much of the vegetation in an attempt to fatten his livestock. Since then, the commons dilemma has blossomed into a model representing social situations in which one must share resources with others. Although common grazing lands are now rare, ample similar examples continue to exist in the real world. Fisheries, environmental cleanliness (or lack there of), and energy supply all continue to operate on a commons basis. Here, opportunity exists for each person to benefit from the offered goods. If usage remains fairly controlled, then there will be enough resources for everyone. However, if people overuse the commons for whatever reason, perhaps in order to reap above-average benefits, then the resources will dwindle and could become spent. An example of a non-environmental commons dilemma, found within a war-like context, is the dilemma of whether or not to participate in an arms race [44]. If one participates by constantly trying to outdo other competitors, who are also trying to be the top player as well, than one will find that the degree of technology needed will escalate sharply to a level less preferred by all players, a level which could do each side in.

Experimentally, the dilemma often goes as follows: X number of people are brought into the laboratory and formed into a group. Each member is given an endowment (e.g. y dollars, y candies, y tickets) prior to the beginning of the session. They are then asked to make a decision as to which of two accounts they will invest any of the amount of their endowment. One is a personal account from which only they will draw from at the end of the session, but without interest. The other is a joint account to which a certain amount of interest will be added, but that will be entirely divided out at the end of the session (both investment and interest) between all x members of the group, regardless of whether they contributed to the joint account or not. The decision to place the endowment in the communal account or in the personal amount account is measured.

From a materialistic perspective, the dominating strategy would be for the DM to deposit the endowment into his own personal account. This way, if many others co-operate, then the DM will be all the more fortunate, getting all of his investment back and a portion of the cooperating group members', with interest. Additionally, if few others cooperate, then at least the DM is not loosing most of the initial investment. In some experiments a bonus has been given, provided that all subjects place their endowments in the shared account. While this would maximize their collective gain the most, it is possible that not all group members will share (creating a deficient equilibrium).

The intergroup prisoner's dilemma game

Goren and Bornstien present a model of a more complicated social dilemma game in [45] Games and Human Behaviour. They predominately examined reciprocation and learning using an intergroup prisoner's dilemma game (IPD; [46]). The authors suggest that this dilemma form is best for examining

the complex factors present in dilemmas that involve conflicts of interest in competing factions where a dilemma solution does not result in a winner-takes-all scenario [46]. Examples of these conflicts can be found during war, labour disputes and elections.

Generally, the IPD is a more complicated version of the common's dilemma and involves both a dilemma about cooperating within a group as well a dilemma about cooperating between groups during conflict. The basic IPD game involves two groups of three people. As in the commons dilemma described above, each group member is given an endowment that he could either keep for himself or put in a join in-group account, which would accrue interest. It is in the personal interest of each decision maker to keep the money for himself instead of placing it in the group account as this would result in the highest personal payoff, regardless of other group members' actions. However, another element has been added to the dynamics: the total number of in-group members that share their endowment affects the out-group member's payoffs, and vice versa.

Dawes, McTavish, and Shaklee [47] used a similarly complex ingroup-outgroup game to study the effect of group identity and communication on social behaviour. Eight groups of four friends were formed into groups of eight strangers and given a commons dilemma whereby immediate payoff depended on a group of stranger's behaviour, but winnings would ultimately be divided equally between friends. Each player had the choice to cooperate with the group of strangers or defect, keeping more money for oneself at the expense of a small monetary penalty per each in-group defector, such that if all defect, the in-group would owe money or have a zero balance. The amount and type of communication allowed within the groups (none, irrelevant only, relevant, or relevant plus roll call) was manipulated as well. The measure of moral behaviour was the proportion of subjects defecting. It was found that relevant communication and relevant communication plus roll-call produced the highest rates of cooperation. They also discovered that subjects who chose to defect judged that others would make the same choice at a four times the rate than as predicted by those that chose to cooperate. This could suggested that those that perceived the presence of a moral element in the dilemma game expected that others would perceive that same element and respond in an ethical manner. Alternatively, those that defected could have judged that others would defect a rate much higher than judged by those who cooperated because of self-justification. Those subjects who cooperated reported being extremely upset that others did not cooperate. Many stated that they felt disappointed and betrayed. An interesting avenue of future investigation could be the social and individual consequences produced when others choose a different behavioural choice. This area of study could be relevant to dilemma situations that occur within a military context, such as the consequences produced when differing behavioural actions are taken during multinational missions.

All of the above social dilemma games can be used in the study of moral behaviour, though, slight variations can be made in each design method. First, the games can be devised such that all players make decisions simultaneously or sequentially. Simultaneous decision-making requires all subjects to make a decision at the same time. This simulates situations in which each player has the same amount of information and none have the advantage of knowing for sure what the others' decisions will be [40]. In contrast, one can design studies using a sequential protocol, which will provides each participant with information regarding where he or she stands in the pecking order (his position in the order with which he deposits goods into a personal or a joint account or makes a statement as to their guilt) as well as the total amount put in by all predecessors [48]. An additional slight variation on the sequential protocol of play is the positional protocol, where subjects merely know their own positions in the sequence of players when they make decisions [38]. The authors state that previous research has found that commons consumption is inversely related to player positioning (the later you are to come to the commons, the less you let your cattle graze).

In addition to the simultaneous or sequential design, one must also design a social dilemma study such that commons and IGP dilemmas' incentives are either economic or non-economic in nature. Research has shown that people are much more competitive when faced with economic social dilemmas than non-economic social dilemmas like the sharing of food [48]. This suggests that the type of incentives chosen for each experiment should be chosen carefully.

Investigating the role of emotion, proximity, and moral intuitions

Lately, there has been increasing scientific interest in the moral decision making factors that have been de-emphasized by Kohlberg's rational cognitive theory. Researchers are now beginning to investigate the role of emotions, proximity and moral intuitions on moral judgement and action. In his 2001 article, "The emotional dog and its rational tail: A social intuitionist approach to moral judgment," Jonathan Haidt suggests that moral *reasoning* is merely a post-judgement construction created when oneself or others question how a certain moral decision was made or when one is attempting to influence others socially. In contrast, moral *judgement* occurs almost instantly following the realization that a dilemma exists and is a product of quick, well-learned intuitions that stem from social and cultural influences. To illustrate the power of moral intuitions, consider the following dilemma, which was used in Haidt's introduction:

> Julie and Mark are brother and sister. They are traveling together in France on summer vacation from college. One night they are staying alone in a cabin near the beach. They decide that it would be interesting and fun if they tried making love. At the very least it would be a new experience for each of them. Julie was already taking birth control pills, but Mark uses a condom

too, just to be safe. They both enjoy making love, but they decide not to do it again. They keep that night as a special secret, which makes them feel even closer to each other. What do you think about that? Is it OK for them to make love?

[19], p. 814

Most people immediately react to this incestual dilemma by responding that it was wrong for them to make love, and they maintain this attitude regardless of a lack of legitimate reasoning as to why it would be wrong [49]. The wording of the dilemma is such that there are no compelling reasons as to why it could be wrong. It states that inbreeding is not a concern as they used two highly reliable forms of birth control and that emotional harm did not occur as a result of their actions. Nevertheless, most subjects maintained that it stills just 'feels' wrong. Haidt and colleagues refer to the occurrence where moral intuitions have no reasoning, yet a person still strongly supports the initial intuition, as moral dumfounding. Additionally, Haidt [20] argues that, while rational moral reasoning does occur in some instances, it plays a more of a revisional role in moral decision making. To date, findings which use a variety of research tools and methodologies suggest that these factors play a larger role in moral decision making than previously thought.

The following section presents some of the methods employed within this new and growing area of interest. As moral intuitions are so well learned and true motivations are not always recognized, testing for their influences becomes more complicated. A subject cannot merely be asked why he or she responded to a moral dilemma in a certain way. Instead, varying strategies have had to be used. Comparisons have been made between those that do and do not produce or recognize somatic signs (called 'markers') in order to show that a lack of 'feeling' leads to an inability to properly guide on-line social decision making. Another research tool, functional magnetic resonance imaging (*f*MRI) has been used to differentiate moral judgement from non-moral judgment, to link moral judgment to emotional processing, and to explain proximity's role in the moral dilemma response. Finally, the study of reaction time differences has also been used in the study of proximity and emotional interference.

Highlighting the necessity of emotion by comparing those with and those without intact somatic markers

One method with which researchers have attempted to show the importance of emotions in moral decisions making is to compare the moral cognition and behaviour of those without intact somatic markers to those with intact emotional systems. Somatic markers are the bodily sensations associated with particular possible outcomes or options. It is believed that if one can not generate or use somatic markers effectively, one will be unable to give affective significance to possible actions, disallowing 'gut reactions' to guide decision making [50].

Damasio and colleagues [51] studied patients who had received brain damage during adulthood similar to that of Phineas Gage, a 19th century man who lost use of his sound judgement, but not his intelligence, when an iron rod was accidentally shot through his prefrontal cortex. They argued that patients with this type of neurological damage would have emotional deficits and an inability to effectively generate and use somatic markers.

Furthermore, they believed that this would significantly affect their decision making. The researchers used galvanic skin conductance responses (GSR) to show an abnormal lack of autonomic arousal when faced with the Iowa Gambling Task. During this task, monetary rewards and punishments are distributed throughout four decks of cards such that two decks can be identified as yielding overall positive rewards and the other two can be identified as yielding overall negative rewards. The player's task is to select one card at a time with the goal of eventually being able to identify which two decks are most positive and which two are most negative. In the average person, skin conductance responses are generated upon receiving feedback as to the outcome of each selected card. Additionally, the average person will begin to have anticipatory skin conductance responses that discriminate between the advantageous and disadvantages decks. Eventually, they will be able to identify the positivity or negativity of all four decks [52].

Damasio et al.'s [51] subjects with prefrontal cortical damage did not respond as average non-neurologically impaired subjects would and were not able to learn the overall expected value of the card decks. Furthermore, while the subjects exhibited preserved abstract social knowledge, they lacked real-life social judgement and behaviour. Despite this lack of social judgement and affective learning, their cognitive functions, as measured by IQ tests, remained preserved.

Anderson et al. [53] used the same methods as Damasio et al. [51], but tested only two subjects who had acquired prefrontal damage in childhood instead of adulthood. Results were similar to Damasio, except that these subjects showed a lack of abstract social knowledge as well. These results would indicate that those who suffered the neurological damage in adulthood were able to gather and maintain abstract social knowledge before their injuries occurred, whereas those who were damaged in childhood did not have a sufficient opportunity to gather social knowledge and could not apply social knowledge after their injuries occurred.

Differentiating moral judgement from non-moral judgement and investigating the role of emotional engagement and proximity on response to moral dilemmas using neuroimaging techniques

In order to investigate whether moral judgement requires the same or different neurobiological processes as non-moral judgement, Moll et al. [54] studied the functional magnetic renascence images produced by subjects during response to a moral/non-moral sentence differentiation task. The task involved viewing both moral (e.g., "They hanged an innocent") and non-moral sentences (e.g., "Stones are made of water"), and judging the morality of their content using either a 'yes' (moral) or 'no' (not moral) response. The brain areas active during moral and non-moral processing were then compared[3]. It was found that

[3] fMRI allows researchers to see the structures of the brain and how their activity levels change over a short time period. Generally, the technique uses magnetic fields and radio waves to produce detailed computer-generated images to distinguish among different types of soft tissue. When a subject is asked to perform a mental function while undergoing fMRI, the computer-generated image will show increased activity at the area used to produce the cognitive function. This is because that particular brain area will require a rush of blood in order to complete its task.

different areas of the brain are used for the two judgment types, suggesting that moral judgements are fundamentally different than non-moral judgements. A subsequent study by the experimenters [55] used the same task, but also controlled for unpleasantness on moral considerations by including negatively valence non-moral statements (e.g. "He liked the dirty toilet"). A further study [56] repeated the results using pictures.

fMRI was used, as well, during Greene et al.'s [57] study in order to investigate the effects of varying levels of emotional engagement on moral decision making. Researchers predict that certain moral dilemmas are more emotionally engaging than other moral and non-moral dilemmas. This area of research was spurred by the observation that extremely similar hypothetical moral dilemmas often elicit profoundly different dilemma responses. Consider the Trolley dilemma:

> Trolley Dilemma: A runaway trolley is headed for five people who will be killed if it proceeds on its present course. The only way to save them is to hit a switch that will turn the trolley onto an alternate set of tracks where it will kill one person instead of five. Ought you turn the trolley in order to save five people at the expense of one?
>
> [57]

Most people respond 'yes,' they ought to turn the trolley in order to save five people at the expense of one. However, when the same dilemma is presented with a small twist, where the decision maker is forced to imagine pushing the single unfortunate person in front of the trolley instead of merely flicking a switch, such as in the footbridge dilemma (below), the majority of people respond quite differently.

> Footbridge Dilemma: A runaway trolley is headed for five people who will be killed if it proceeds on its present course. You are standing next to a stranger on a footbridge that spans the tracks, between the on coming trolley and the five people… The only way to save the people is to push the stranger off the bridge, onto the tracks below. He will die if you do this, but his body will stop the trolley from reaching the others. Ought you save the five people by pushing this stranger to death?
>
> [57]

Specifically, people exposed to the footbridge dilemma say 'no,' you should not push someone to their death to save five other people. Greene et al. [50] hypothesize that the reason for the decision maker's change of heart is because the footbridge dilemma is much more emotionally engaging, because it forces the decision maker to play a seemingly more direct intervention in someone's death by imagining pushing a nearby stranger to his death, instead of merely flicking a switch. They hypothesized specifically that the brain areas associated with emotion would be more active during contemplation of 'up close and personal' footbridge-like dilemmas than during more detached trolley-like dilemmas. For each of two experiments, nine subjects were given a total of 60 dilemma actions (i.e. to steal organs from one person and give them to five others) of a moral-personal, moral impersonal, and non-moral nature. They were then asked to judge if the action was "appropriate" or

"inappropriate" while undergoing brain scanning (*f*MRI). Analysis of the fMRI data showed that neurological processing of the moral-personal dilemmas involved significantly more activation in the areas of the brain that were associated with emotion than did contemplation of moral-impersonal dilemmas and non-moral dilemmas. Additionally the authors correctly hypothesized that brain areas associated with working memory, which have been found to become less active during emotional processing, would be less active during contemplation of moral personal dilemmas than moral-impersonal or non-moral dilemmas.

Using reaction time data to investigate the role of proximity on response to moral dilemmas

Greene et al. also predicted a pattern of emotional interference in which automatic emotional processes impede response to emotionally salient moral dilemmas in a manner similar to Stroop's [58] concept of behavioural interference in which the naming of a colour word is interfered with if the word name is an incongruent colour. Accordingly, it was believed that subjects who responded incongruently to emotionally salient dilemmas (i.e., saying action in the footbridge dilemma would be 'appropriate', you should push the stranger to his death) would be slower to respond due to emotional interference (a strong emotional feeling against the chosen action) relative to those who responded congruently (i.e., saying action in the footbridge dilemma would be 'inappropriate,' you should not push the stranger to his death). Furthermore, as the illusion of proximity in the trolley dilemma is not as great (one merely flicks a switch to cause death), reaction time differences between congruent and incongruent trials would not be significant. Through measuring response times taken to produce either the 'appropriate' or 'inappropriate' responses to the emotional-engaging and non-emotionally engaging dilemmas, the experimenters found support for the emotional interference hypothesis. Additionally, overall reaction time data indicated that morally-impersonal dilemmas more closely resemble non-moral dilemmas than they do morally-personal dilemmas.

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Conclusion and future directions

The purpose of this report was to present a comprehensive review of the various methods of studying moral and ethical dilemmas. This review identified methodologies used in three areas of study which are relevant to the study of ethics in relation to DND and the CF.

The merits of two measures of individual moral judgement, the Moral Judgement Interview (MJI) and the Defining Issues Test (DIT), were first discussed. These measures allow comparisons of moral judgement differences within and between individuals to be made. Furthermore, the measures can be used to gather supportive evidence for various theories, such as Kohlberg's moral developmental theory. Of relevance to military ethical researchers, these measures can be used to create comparisons for the purpose of gauging the effect that external factors play on individual moral judgment. We could use these measures to compare the variables present in a command decision making situation to determine which variables encourage and discourage the highest level of moral judgement. More specifically, we could use the measures' resultant scores as pre-and post comparisons in order to see if ethical training or exposure to highly ethical leaders makes a difference in CF members' responses to ethical dilemma situations. Overall, the two moral judgement measures assessed in this review are considered valid and reliable measures of individual moral reasoning. Kohlberg's MJI is an excellent tool used for taping into a subject's moral reasoning in an interview format. It allows respondents to compose less-structured responses than Rest's DIT and allows for the in-depth probing necessary in some investigations. Alternatively, the more popular DIT is easy to administer, less time consuming to score, and is considerer a slightly less subjective measure of individual moral judgment. In the future, perhaps it would be ideal to develop a version of the instruments that include a greater proportion of defence relevant ethical dilemmas.

As measures of individual moral judgement do not necessarily predict moral behaviour, it then became necessary to review alternative methods of investigating real-life ethical behaviour. Methods of studying altruistic or helping behaviour were identified foremost, as this type of behaviour is a common concern in the defence community. Many recent CF mission objectives include a focus on peace keeping and global aid. In these contexts, members of the Canadian Forces often encounter ambiguous dilemma situations, where they must choose between either aiding others or fulfilling other mission objectives and following the prescribed rules of engagement. Generally, the two most common types of simulated real-life helping behaviour scenarios involve situations where assistance is required and situations in which the opportunity exists to charitably give away some of one's resources. Common manipulations involve altering the number of bystanders, as well as the availability and the level of responsibility of the possible helper. While it is difficult to undertake these studies due to the stress that they could place on potential helpers, the information that they provide regarding how people altruistically act in stressful or emergency situations may prove to be invaluable. Additionally, games designed to simulate social dilemmas are useful tools in the study of real-life moral behaviour as humans are social beings and are often forced to make a choice between maximizing group or personal interests. The most basic social dilemma game, the prisoner dilemma, provides an opportunity to study more basic concepts of social behaviour. Additionally, the commons dilemma provides an excellent chance to investigate a

number of more complex social-behavioural incidents relevant to the CF, such as the individual and group social consequences of being a cooperative or uncooperative member of the defence community. Finally, the intergroup prisoner's dilemma game is considered to be ideal for studying the complex factors present in dilemmas that occur between competing parties where dilemma solutions do not result in winner-takes-all scenarios, such as conflicts that arise between competing factions during war.

In addition to investigating individual moral judgement and behaviour, we summarized a wide range of research techniques used to gather evidence that emotions, proximity, and moral intuitions play a role in moral decision making. These techniques included comparing the somatic responses, moral cognition, and behaviour of those who lack somatic markers to individuals with intact somatic markers. In addition, we examined the use of neuroimaging techniques to study neurological processing of ethical dilemmas and the study of reaction time in order to identify if emotions play a significant role in the ethical decision making process. While it is unlikely that DRDC investigators will use fMRI techniques or comparisons of those who lack somatic markers during their own investigations, it is important to note that there are neurological methods which have been used to provide evidence that moral reasoning is a separate process from other types of decision making, that moral decision making can involve emotional processing, and that moral intuitions and awareness of one's emotional system plays a large role in guiding social decision making.

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List of symbols/abbreviations/acronyms/initialisms

DND	Department of National Defence
DRDC	Defence Research and Development Canada
CF	Canadian Forces
MJI	Moral Judgement Interview
DIT	Defining Issues Test
GSR	Galvanic skin response
DM	Decision maker
IPD	Intergroup prisoner's dilemma
*f*MRI	Functional magnetic resonance imaging

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14. ABSTRACT

(U) Research methodologies used to investigate three areas of moral and ethical decision making are reviewed with the intent to highlight those that are potentially of interest to DRDC and the defence research community. A summary of measures used to examine individual moral reasoning includes compendia of the widely used Moral Judgement Interview and Defining Issues Test. Additionally, measures of moral behaviour are discussed with an emphasis on those surrounding issues of helping and social behaviour. Moreover, research methods used to investigate growing fields of interest, such as the influence of intuitions, emotions and proximity on moral judgement and actions, are also presented. Conclusions are drawn and recommendations for future directions of research relevant to DRDC are made.

(U) Les méthodes de recherche utilisées pour sonder trois secteurs de prise de décisions morales et éthiques en vue de déceler celles qui pourraient intéresser Recherche et développement pour la défense Canada (RDDC) et la communauté de la recherche de défense ont été examinées. Le résumé des instruments de mesure utilisés pour étudier le raisonnement moral personnel inclut des abrégés de la Moral Judgement Interview et du Defining Issues Test, deux instruments largement répandus. Les instruments de mesure du comportement moral sont également étudiés, et l'accent est mis sur les questions connexes de l'aide et du comportement social. Les méthodes de recherche utilisées pour sonder des domaines qui suscitent de plus en plus d'intérêt, notamment l'influence des intuitions, des émotions et de la proximité sur le jugement moral et les actes, sont également présentées. Des conclusions sont tirées, et des recommandations sur l'orientation de la recherche pertinente pour RDDC sont faites.

15. KEYWORDS, DESCRIPTORS or IDENTIFIERS

(U) Military Ethics; Moral Reasoning; Emotion; Methods; Moral Development